Institutional arrangements and sustainable health service delivery in council-designated hospitals in Tanzania's Lake Zone

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ABSTRACT

This study investigates the impact of Institutional Arrangements (IAs) on Sustainable Health Service Delivery (SHSD) in Council Designated Hospitals (CDHs) within Tanzania's Lake Zone, focusing on partnerships between local governments and faith-based organisations. Guided by Agency Theory (AT) and Resource-Based Theory (RBT), the research conceptualises IAs as both external governance and internal resource management mechanisms influencing SHSD. A cross-sectional survey design was used, targeting clients aged 15 years and above who had attended CDHs at least twice during 2022–2023. The sampling frame consisted of ward-level client lists maintained by each CDH. Three wards with the highest client volumes were purposively selected per CDH to ensure representation of primary catchment areas. From these lists, respondents were randomly sampled using Cochran's formula, resulting in 384 valid responses from 430 distributed questionnaires (an 89% response rate). Respondents completed the Institutional Arrangements Clients Questionnaire (IACQ), which included socio-demographic questions and 37 IA-related indicators mapped to 8 latent variables. Data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM). Results showed that institutional arrangements explained about 69% of the variance in SHSD ($R^2 = 0.6892$), with process management emerging as the strongest predictor ($\beta = 0.3698$, $T = 6.5007$, $P < 0.001$). The findings indicated that process, and resource management exert the most substantial positive effects on health service delivery, whereas hospital workforce practices and the learning environment do not demonstrate significant direct impacts, impliedly the influence may be indirect or emerge over time. Based on these results, it is recommended that CDHs prioritise the optimization of process and resource management within their operations and reinforce both client–institution interaction and organisational culture. Additionally, Local Government Authorities (LGAs) should focus on strengthening financial planning, while Faith-Based Organizations (FBOs) are encouraged to critically reassess management practices and invest in workforce development to foster long-term improvements in service delivery.

Keywords: Council Designated Hospitals (CDHs), Institutional Arrangements (IAs), Sustainable Health Service Delivery (SHSD), Tanzania

I. INTRODUCTION

Poor institutional arrangements (IAs) within dual-owned Public-Private Partnership (PPP) facilities have been extensively documented as a key factor contributing to persistently unsatisfactory service delivery across multiple sectors, including health (Kaiser et al., 2025; Li & Wang, 2024). IAs refer to the formal agreements established between public and private entities to jointly operate and manage shared facilities. The IAs violations affecting both developed and developing countries. A broad body of scholarship, encompassing global, low-, and middle-income country contexts, has consistently demonstrated that violations of IAs in the health sector often arise from deficiencies in financial agreements, weaknesses in leadership and organisational structures, persistent funding uncertainties, and conflicting interests among stakeholders (Iroz et al., 2024;Samira et al., 2024). However, there remains a notable gap regarding the specific dynamics and manifestations of these IAs issues within African contexts, particularly in East Africa.

The PPPs are typically characterised as collaborative arrangements between government agencies and private sector organisations, designed to deliver public services or infrastructure. The scholarly discourse on PPPs emphasises varied dimensions: for example, Nassar et al., (2020) underscores the long-term orientation and risk-sharing mechanisms inherent in PPPs. whereas Ogwu (2025) pointed conceptual heterogeneity, highlighting their roles as both governance frameworks and financial instruments. Other international scholars further accentuate the importance of institutional cooperation in the joint provision of public goods (Novikova et al., 2023). Despite these definitional differences, PPPs

consistently encompass elements of inter-organisational collaboration, contractual governance, and shared responsibilities, all aimed at enhancing the effectiveness of public service delivery.

The high expectations that effective IAs would lead to sustainable health service delivery (SHSD) and support the achievement of Sustainable Development Goal (SDG) 3 - aimed at ensuring healthy lives and promoting well-being for all (UN, 2015). The current evidence suggests that this goal remains largely unmet (WHO, 2022). Notably, inadequate SHSD persists in both developed and developing countries within PPP-operated health facilities, including Council Designated Hospitals (CDHs). The CDHs are healthcare facilities operated through PPPs with Local Government Authorities (LGAs), predominantly in collaboration with Faith-Based Organisations (FBOs). These partnerships are formalised through service level agreements (SLAs) designed to supplement the costs of service provision in isolated populations or areas lacking government facilities (URT, 2020a).

There are divergent perspectives regarding IAs and their potential to significantly improve global healthcare by enhancing access, developing better facilities, and delivering higher-quality services, particularly in underserved areas. Kanti et al., (2020) emphasize the importance of PPPs as essential mechanisms for expanding the provision of public goods and services, highlighting the private sector's complementary role alongside government resources in promoting sustainable development. However, the extent in which IAs are effectively upheld in PPP particularly in CDHs remains unclear.

Numerous, worldwide researches have been conducted to understand IAs on SHSD. Manhiça (2020) conducted an investigation into IAs within Sub-Saharan African (SSA) countries, revealing that cultural, community, and material conditions exert a significant influence on SHSD. In a parallel study, Cortez and Quinlan-Davidson (2022) examined private IAs in public health services across the South Caucasus region (Armenia, Azerbaijan, Georgia), identifying critical challenges such as weak institutional capacity, lack of trust, fragmented health markets, and affordability issues. These factors collectively contributed to inadequate regulation of private providers, elevated out-of-pocket (OOP) expenditures, poor data sharing, and insufficient oversight mechanisms. Furthermore, Mbaka and Mwange (2024) demonstrated IAs within PPPs serve as a viable strategy for financing healthcare infrastructure in Zambia, particularly in contexts characterised by strong political commitment, clear legal frameworks, stable economic conditions, and adequate technical capacity. Conversely, research by Boundioa (2025) and Yakubovskiy (2024) highlighted persistent budget deficits and political instability in certain European Union member states including Romania, France, Hungary, and Poland as well as in West African Economic and Monetary Union (WAEMU) countries such as Benin, Burkina Faso, and Côte d'Ivoire. Similar conditions of economic instability, budgetary shortfalls, and political volatility are observable across various African contexts, East African inclusive (Ogwu, 2025; Nuhu et al., 2020). Therefore, a rigorous assessment of IAs within PPPs is essential to evaluate their contribution to SHSD.

According to World Bank data, private health expenditure represented over 35% of total health spending in Kenya and Uganda in 2022, compared to 30% in Tanzania (UNICEF, 2020). Despite the substantial contribution of the private sector, progress toward Universal Health Coverage (UHC) remained stagnant between 2022 and 2023, with service coverage rates recorded at 78% in Kenya, 69% in Uganda, and 58% in Tanzania (WB, 2024). The findings suggest that financial investment alone is insufficient to achieve the SHSD; effective governance and strategic allocation of resources are also critical determinants of success in SHSD. Scholars have identified CDHs as key institutions operating in underserved regions (Bwana, 2021; Sirili et al., 2019). These institutions warrant particular attention, as they frequently serve minority populations who are inadequately reached by both government and private health services and thus remain at elevated risk for critical health challenges.

The study introduced several novel aspects to the existing literature on SHSD in East Africa. First, it uniquely focuses on dual-ownership of PPP in CDHs, which are a distinctive feature within the region's healthcare landscape. Second, by employing Partial Least Squares Structural Equation Modelling (PLS-SEM), the study is able to model and analyse multiple dimensions of governance simultaneously, offering a more comprehensive understanding of IAs and their effects. Third, unlike many prior studies that rely on provider or administrative data, this research captures SHSD from the perspective of clients themselves, providing valuable insight into clients' experiences and perceptions. Collectively, these innovations contribute to a deeper and more nuanced understanding of governance and SHSD within the East African context.

Despite the recognised importance of SHSD, there is a persistent lack of quantitative data that clearly defines the scale and impact of SHSD challenges in Tanzanian CDHs. Only a few studies Kitole et al., (2025) and Lonial and Raju (2015) have systematically reported on key hospital performance indicators such as service coverage, patient outcomes, or operational efficiency leaving a significant gap in understanding the actual performance of CDHs. Furthermore, while governance failures are often cited in the literature, detailed and context-specific analyses remain scarce. For example, although Health Facility Governing Committees (HFGCs) are designed to foster community participation, research reveals that community involvement tends to be passive, with low public awareness and unclear accountability structures (Nuhu et al., 2020; Masanyiwa et al., 2019). These limitations contribute to a lack of clarity regarding the nature and extent of governance deficiencies in CDHs.

A further gap exists in the inadequate documentation of resource constraints. Although decentralisation reforms, such as Direct Health Facilities Financing (DHFF), have aimed to empower HFGCs, empirical evidence quantifying the impact of financing gaps, staffing shortages, and infrastructure deficiencies on SHSD remains limited (UNICEF, 2020); (Lufunyo & Pallangyo, 2017). Additionally, the client perspective is frequently underrepresented, as most studies rely on provider or administrative data rather than capturing service users' experiences. For instance, while feedback mechanisms exist, evidence suggests that clients rarely utilise them, highlighting a disconnect between system design and actual usability (Kengia et al., 2025).

Finally, there is a notable scarcity of comparative assessments across different governance models or institutional arrangements in Tanzanian CDHs. Although advanced analytical techniques such as Partial Least Squares Structural Equation Modelling (PLS-SEM) have been used to examine governance effects in broader sub-Saharan contexts, their application to the Tanzanian CDH setting remains limited (Kabongo & Mbonigaba, 2024).Collectively, these gaps underscore the need for robust, empirical, and multidimensional research to inform improvements in SHSD and governance within Tanzanian CDHs.

1.1 Research Objectives

i. Assess how different dimensions of institutional arrangements (such as management, planning, resource allocation, and organizational culture) impact the quality, access, and sustainability of health service delivery in CDHs.
ii. Identify which aspects of IAs most significantly predict improved SHSD from the perspective of clients using these hospital services.

II. LITERATURE REVIEW

2.1 Theoretical Review

Understanding the relationship between Institutional Arrangements (IAs) and Sustainable Health Service Delivery (SHSD) in Council Designated Hospitals (CDHs) is grounded in two main theories: Agency Theory (AT) and Resource-Based Theory (RBT).

2.1.1 Agency Theory (AT)

Agency Theory explains how external governance mechanisms, such as formal contracts, defined roles, and incentive alignments, are established to minimize agency problems between principals (e.g., government or hospital owners) and agents (e.g., hospital managers or providers). In the context of PPP health facilities, AT highlights the importance of clear service level agreements, accountability structures, and monitoring systems to ensure that contracted partners meet agreed objectives and minimize conflicts (Mitnick, 2013). Effective agency mechanisms directly influence organizational access to and use of resources, thus impacting the quality and sustainability of health service delivery.

2.1.2 Resource-Based Theory (RBT)

Resource-Based Theory (RBT) emphasizes the internal capabilities and unique resources of an organization such as skilled staff, strong leadership, efficient processes, and a supportive culture as central to achieving and sustaining competitive advantage in service delivery. Within CDHs, RBT underscores that valuable, rare, inimitable, and non-substitutable resources (VRINE) embedded in processes and organizational culture are fundamental to delivering high-quality, sustainable health services (Zimuto & Zvarimwa, 2022). RBT and AT are complementary: robust external governance (AT) enables organizations to focus on leveraging and protecting their internal strengths (RBT), suggesting that SHSD is most robust when both external and internal arrangements are mutually reinforcing.

2.2 Empirical Review

The studies reviewed were systematically organized to examine the influence of various dimensions of IAs specifically management, planning, resource allocation, and organizational culture on the quality, accessibility, and client satisfaction of health service delivery within CDHs. Furthermore, the review sought to identify which specific aspects of IAs are most predictive of enhanced SHSD, as perceived by clients utilising these hospital services.

2.2.1 IA Dimensions and Impact on Health Service Delivery

Empirical literature consistently highlighted the importance of key IA dimensions in shaping health service outcomes. Studies show that effective management, planning, resource allocation, and a positive organisational culture within PPP-supported hospitals can significantly enhance quality, access, and client's satisfaction in health service delivery (Kaiser et al., 2025). However, the realisation of these benefits is often hindered by challenges such as poor governance, weak contract enforcement, and inadequate stakeholder alignment. For instance, Li and Wang (2024) found that poor IA quality and larger government size are linked to increased project failures in China, while supportive

regulatory frameworks and robust fiscal capacity contribute to PPP success. Their findings emphasize that strong governance structures, clearly defined contracts, and stakeholder collaboration, all key aspects of IAs are necessary to achieve improved health service outcomes. These insights directly address clarifications on how each IA dimension contributes to quality, access, and satisfaction in service delivery.

In the Sub-Saharan African context, effectiveness is further influenced by local factors such as political stability, legal frameworks, and stakeholder cooperation (Mbaka & Mwange, 2024; Manhiça, 2020). Limitations in technical capacity, funding, and accountability often restrict service improvement efforts, reinforcing the need for context-specific and adaptive IA strategies. This evidence highlighted which IA dimensions are most relevant in the Tanzanian CDH setting.

2.2.2 Predictive IA Aspects from the Client Perspective

Locally, research on PPP-supported CDHs in Tanzania provides important insights into which IA aspects most strongly predict improved SHSD from the client perspective. Studies such as Bwana (2021) reported facilities with innovative management, efficient resource use, and a supportive organisational culture tend to achieve higher technical efficiency and client satisfaction, particularly in underserved regions. This aligned with pinpointing the IA dimensions most valued by hospital clients.

Despite these successes, ongoing shortages of staff, equipment, and funding continue to constrain service quality (Kitole et al., 2025; Nuhu et al., 2020). Data Envelopment Analysis (DEA) revealed that while some hospitals attain high efficiency, many still underperform, often due to resource misallocation. These findings underscore the need to further refine IA practices to enhance SHSD. Community engagement, an important aspect of both governance and organisational culture, remains a significant gap. Limited public participation and weak accountability mechanisms constrain sustainable progress (Masanyiwa et al., 2019). Notably, few Tanzanian studies have used advanced analytical models to disentangle the specific impacts of each IA dimension or to centre client perspectives. This study addressed by employing methodologies that highlighted which IA aspects most strongly predict improved SHSD from the client's viewpoint.

2.3 Institutional Arrangements and Governance in PPPs

IAs in PPPs encompass both external governance mechanisms such as contracts and service-level agreements and internal management attributes including organisational culture and leadership effectiveness (Kaiser et al., 2025; Manhiça, 2020). However, literature often treats these dimensions in isolation, rarely exploring their interconnections or cumulative effects. This study's hypothesis framework, by contrast, is designed to systematically evaluate how these IA dimensions defined as independent variables work together to drive quality, access, and satisfaction in SHSD (dependent variables). A critical review also reveals that many existing IAs in Tanzanian CDHs inadequately addressed resource constraints or foster accountability and adaptation, especially in the face of complex, context-specific challenges. This study aims to fill these gaps by providing an integrated, evidence-driven analysis of IA effectiveness across a range of internal and external governance factors.

2.4 SEM/PLS-SEM in Health Governance

The adoption of Partial Least Squares Structural Equation Modelling (PLS-SEM) offers methodological advantages for examining the complex, multi-dimensional relationships between IAs and SHSD outcomes (Rao et al., 2025; Hair and Sabol, 2024). Despite its suitability for small samples and formative constructs, PLS-SEM is rarely utilised in Tanzanian PPP research, limiting the depth of causal inference and interactive effects analysis. This study's use of PLS-SEM thus represents a methodological contribution, directly advancing the research objectives by generating quantitative evidence about which IA dimensions most strongly predict improved SHSD from the client perspective.

2.5 Theoretical Framework and Hypothesis development

To provide a more coherent theoretical framework, it is essential to clarify the interaction between governance mechanisms and organisational resources, as well as how Agency Theory (AT) and Resource-Based Theory (RBT) complement each other analytically. Governance mechanisms, as conceptualised by AT, create the external structure that organisations must navigate (Mitnick, 2013). These include formalised contracts, well-defined roles, and incentive alignment, all of which aim to minimise agency problems by clarifying expectations and establishing accountability. The presence of such mechanisms directly influences how organisations access, deploy, and protect their internal resources (Zimuto and Zvarimwa, 2022).

In turn, RBT provides insight into the internal dynamics of organisations, emphasising that the effective utilisation of unique and valuable resources such as skilled personnel, advanced management systems, and a supportive organisational culture is fundamental to achieving SHSD. These resources are most effectively leveraged in

environments where external governance structures are strong, as such structures enable organisations to focus on their internal strengths rather than being preoccupied with uncertainty or misaligned incentives.

The integration of AT and RBT thus offers a comprehensive lens through which to analyse SHSD in CDHs. While AT explains how external contractual relationships and oversight frameworks ensure that Faith-Based Organisations (FBOs) fulfil their obligations to Local Government Authorities (LGAs), RBT highlights how FBOs' internal capabilities drive their ability to deliver high-quality services. Importantly, these two perspectives are not independent; effective governance mechanisms enhance the organisation's ability to strategically deploy its core resources, while strong internal resources can improve the organisation's capacity to comply with and benefit from governance structures. This interdependence suggests that sustainable health service delivery emerges most robustly when external governance and internal resource endowments are mutually reinforcing. The literature reveals both the promise and the complexity of PPPs in advancing SHSD yet, it often stops short of critically interrogating contradictions, integrating findings across themes, or addressing major gaps in Tanzanian-specific evidence. There remain unresolved questions regarding the sustainability, equity, and accountability of PPP arrangements in Tanzania's CDHs, especially given ongoing resource, governance, and organisational challenges.

2.6 Research Structure and Hypotheses

Each of the eight latent variables was considered an integral part of IAs because they collectively underpin how CDHs are governed and managed to achieve SHSD. Client management effectiveness aligns with Agency Theory through reducing information asymmetry and, from the RBT perspective, represents an organisational capability. Organisational culture acts both as a unique resource (RBT) and as a behavioural guide that minimizes agency conflict (AT). Employee management effectiveness constitutes a strategic resource (RBT) and ensures role clarity and incentive alignment (AT). Hospital learning capacity is a dynamic capability (RBT) while also serving to bridge knowledge gaps between principals and agents (AT). Management and leadership effectiveness provide monitoring and alignment (AT), while also constituting a valuable organisational asset (RBT). Planning and budgeting effectiveness ensure accountability (AT) and represent an internal capability for sustainable delivery (RBT). Process management effectiveness leads to operational excellence (RBT) and supports agent alignment with principal objectives (AT). Finally, resource management effectiveness is central to acquiring and deploying critical assets (RBT) and mitigating resource misuse through sound governance (AT). Collectively, these dimensions operationalize IAs as the comprehensive set of external and internal arrangements that drive effective, accountable, and SHSD in PPP hospital settings. Accordingly, the study tested the following hypotheses:

Ho_1: Client management effectiveness has a positive effect on SHSD.

The AT suggests that well-designed client management systems align the interests of hospital agents and clients, reducing information asymmetry and improving care quality. The RBT highlights that effective client management is a critical organisational capability that provides competitive advantage in service delivery (Altarifi et al., 2024).

Ho_2: Organisational culture has a positive effect on SHSD.

From the RBT perspective, a strong, positive organisational culture is a unique and inimitable resource that fosters trust, motivation, and collaboration, all of which are essential for high-quality service delivery (Ramori *et al.*, 2021). AT also posits that culture can help align agent behaviours with the goals of the principal, minimising agency conflicts (Saeed et al., 2022).

Ho_3: Employee management effectiveness has a positive effect on SHSD

The RBT views skilled and motivated employees as strategic assets that drive organisational performance. Effective employee management practices develop and retain such resources, enhancing service quality (Lyimo *et al.*, 2024). AT suggests that clear roles, incentives, and performance management align employee actions with organisational goals (Gilardino et al., 2022).

Ho_4: Hospital learning capacity has a positive effect on SHSD.

Hospital learning capacity, as per the RBT, is a dynamic capability that enables adaptation and innovation, leading to sustained service improvements (Long et al., 2018). AT supports continuous learning as a mechanism to reduce knowledge gaps between principals and agents and ensure better decision-making (Govindasamy et al., 2024).

Ho_5: Management and leadership effectiveness has a positive effect on SHSD

AT emphasises the role of effective leadership in monitoring, guiding, and aligning agent behaviours with organisational objectives. The RBT asserts that strong leadership is a valuable resource enabling organizations to leverage other assets for improved performance (Wiedenmayer et al., 2019).

Ho_6: Planning and budgeting effectiveness has a positive effect on SHSD.

Planning and budgeting are essential governance mechanisms (AT) that ensure accountability and optimal resource allocation, reducing inefficiencies and agency costs (Decker et al., 2023; Kigume et al., 2018). The RBT identifies these practices as organisational capabilities that support SHSD.

Ho_7: Process management effectiveness has a positive effect on SHSD.

The RBT recognises effective process management as a source of operational excellence and a basis for sustainable competitive advantage (Ramori et al., 2021). AT holds that well-defined processes reduce ambiguity and monitoring costs, ensuring agents work towards principals' objectives (Kilci, 2021).

Ho_8: Resources management effectiveness has a positive effect on SHSD.

The RBT posits that the effective acquisition, allocation, and utilisation of resources physical, financial, and human are central to delivering superior services (Ansmann et al., 2021). AT suggests that sound resource management mitigates misuse and aligns resource deployment with organisational goals.

III. METHODOLOGY

3.1 Research Design

A cross-sectional survey design was employed to assess the influence of IAs on SHSD in CDHs operating under PPP in Tanzania's Lake Zone. This design enabled the collection of quantitative data at a single point in time to evaluate the associations between IA factors and SHSD outcomes.

3.2 Study Area

The study was conducted in five regions within Tanzania's Lake Zone: Mwanza, Mara, Kagera, Simiyu, and Shinyanga (URT, 2020b). These areas were selected due to their high density of CDHs established under PPP arrangements. Selected districts within these regions met criteria including: the presence of CDHs, rural location, distance from regional headquarters, and operation for at least five years.

3.3 Target Population

The target population comprised clients aged 15 years and above who had accessed services at CDHs in the selected districts at least twice between 2022 and 2023 (Zeru et al., 2023). This age threshold was chosen to ensure participants could provide informed and reliable responses.

3.4 Sampling and Sample Size

A multi-stage sampling technique was employed to ensure a representative sample. Stage 1: In each selected district, the three wards with the highest client volumes per CDH were purposively chosen to capture the primary catchment areas. Stage 2: From up-to-date hospital-maintained ward lists, eligible clients aged 15 years and above who had accessed CDH services at least twice during the study period were identified. Stage 3: The required sample size was calculated using Cochran's formula, yielding a minimum of 384 respondents (Dörnyei & Griffee, 2010). To account for potential non-responses or incomplete submissions, 430 questionnaires were distributed. After data screening, a total of 384 valid responses were included in the analysis, resulting in a response rate of approximately 89%. Responses that were incomplete or did not meet the eligibility criteria were excluded.

3.5 Data Collection Instruments and Procedures

Data were collected using the Institutional Arrangements Clients Questionnaire (IACQ). The questionnaire included: Socio-demographic information. 37 IA-related items mapped to 8 latent variables Responses were rated on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). Data collection was facilitated by hospital administrators, who provided access to up-to-date ward lists and assisted with participant contact. Oral informed consent was obtained from all respondents.

3.6 Data Analysis

Descriptive statistics were generated used International Business Machines Statistical Package for the Social Sciences (IBM SPSS) to summarise respondents' demographic characteristics and overall perceptions of health service delivery. For inferential analysis, Partial Least Squares Structural Equation Modelling (PLS-SEM) was conducted using Smart PLS 4 to assess and test the hypothesised relationships between IAs factors and SHSD (Dörnyei & Griffee, 2010). The reliability and validity of the measurement instruments were evaluated through Cronbach's Alpha, Composite Reliability (CR), Average Variance Extracted (AVE), and discriminant validity assessments. Structural model path coefficients were estimated and their statistical significance was determined using a bootstrapping procedure with 5,000 resamples. This rigorous approach ensured robust evaluation of both the measurement and structural models.

3.7 Ethical Consideration

Ethical clearance was obtained from Moshi Co-operative University (MoCU). Official permission was sought from the Ministry of President's Office – Regional Administration and Local Government (PO-RALG), which

coordinated approvals at the regional, district, and hospital levels. Participant confidentiality and anonymity were strictly maintained, with data used solely for research purposes.

IV. FINDINGS & DISCUSSIONS

4.1 Findings

4.1.1 Respondents' Demographic Characteristics

The demographic profile of the study's respondents provides a solid foundation for achieving the stated research objectives regarding the influence of institutional arrangements (IAs) on sustainable health service delivery (SHSD) in Council Designated Hospitals (CDHs) in Tanzania's Lake Zone. The gender distribution 44% male and 56% female closely mirrors national working-class statistics, thus supporting the representativeness and generalisability of the dataset for analyzing both independent variables (IAs dimensions) and dependent variables SHSD (quality, access, and satisfaction).

Nearly half (46.6%) of respondents were aged 35 or older, which is consistent with the age structure of Tanzania's workforce. This age profile may contribute to mature and stable perspectives in survey responses, aligning well with the study's objective to accurately assess perceptions of management, planning, resource allocation, and organizational culture. The diversity in family size across regions is also noteworthy: while 72% of respondents reported families with six or fewer members, this proportion varied significantly, reaching 79% in Kagera and 90% in Mwanza, but dropping to 36.5% in Simiyu. Such regional differences may reflect local socio-economic contexts and could shape respondents' perceptions regarding resource allocation and economic opportunity directly connecting to the study's focus on how IAs impact access and sustainability of health services.

Educational attainment further strengthens the alignment between the sample and the research objectives. With 59.6% of respondents having completed secondary education and regional variation ranging from 45.7% in Mwanza to 75% in Mara the study benefits from a respondent pool likely to be familiar and comfortable with survey instruments. This enhances the depth and reliability of perception-based responses that are critical for evaluating which aspects of IAs most significantly predict improved SHSD from the client perspective. These findings are consistent with previous research by Mwinyi et al., (2024) and Jeong et al., (2009), which highlighted the importance of demographic representativeness and educational attainment for data validity in health systems research. Hence, provide a credible basis for exploring the relationship between IAs (independent variables) and SHSD outcomes (dependent variables), while also supporting the reliability and validity of the study's findings against the backdrop of reviewed literature.

Table 1

Respondents demographic

Demographic variables	Lake Zone Total		Region									
			Kagera		Mwanza		Mara		Simiyu		Shinyanga	
	n	%	n	%	N	%	n	%	n	%	n	%
Sex of respondent												
Male	169	44%	52	47%	31	38%	32	42%	40	49%	14	40%
Female	215	56%	58	53%	50	62%	44	58%	42	51%	21	60%
Respondent age												
<24 years	32	8%	14	13%	9	11%	4	5%	1	1%	4	11%
24-34 years	173	45%	57	52%	52	64%	34	45%	18	22%	12	34%
above 35	179	47%	39	35%	20	25%	38	50%	63	77%	19	54%
Number of family members												
<6	277	72%	87	79%	73	90%	62	82%	30	37%	25	71%
7-10	81	21%	19	17%	1	1%	11	14%	46	56%	4	11%
above 10	26	7%	4	4%	7	9%	3	4%	6	7%	6	17%
Level of education												
Primary	114	30%	23	21%	29	36%	16	21%	30	37%	16	46%
Secondary	229	60%	72	65%	37	46%	57	75%	45	55%	18	51%
Diploma	32	8%	10	9%	15	19%	3	4%	3	4%	1	3%
Degree	8	2%	4	4%	0	0%	0	0%	4	5%	0	0%
Postgraduate	1	0%	1	1%	0	0%	0	0%	0	0%	0	0%

4.1.2 The Conceptual Model Results

The IAs proposes that eight key organisational and managerial factors directly influence the SHSD. These factors include management and leadership-related (MA) elements, which guide strategic direction and oversight; planning and budgeting-related (PB) processes, ensuring resource allocation and financial accountability; organisational

learning-related (LE) capabilities, fostering continuous improvement and innovation; organisational culture-related (CU) aspects, promoting shared values and teamwork; resource management-related (RE) activities, focused on the optimal use of physical, human, and financial resources; process management-related (PR) practices, enhancing operational efficiency and safety; client management-related (CI) strategies, which center on quality, access, and client satisfaction; and health worker management-related (HW) factors, addressing recruitment, development, and retention of skilled staff (Fig. 1). Together, these interconnected dimensions form a comprehensive framework for understanding and improving SHSD outcomes in CDHs settings.

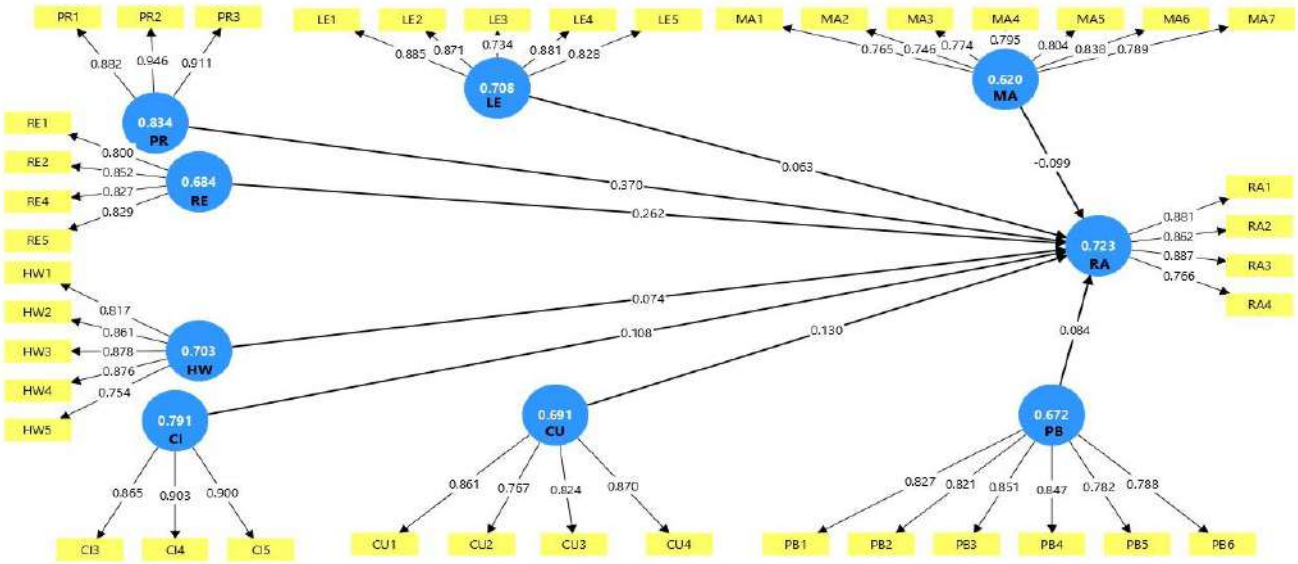

Figure 1

Conceptual model on Health Service Delivery's factors

4.1.3 Measurement Model Evaluation Results

The evaluation of the measurement model focuses on assessing the reliability and validity of the manifest variables. Reliability is examined through tests of individual item and construct reliability, ensuring consistent measurement across indicators and constructs. Validity is assessed by evaluating both convergent and discriminant validity, thereby confirming that the variables accurately represent the intended constructs and are sufficiently distinct from one another (Hair et al., 2011). Table: 2 reveals that all constructs have high internal consistency and reliability, with Cronbach's Alpha values above 0.70 and Composite Reliability (CR) values ranging from 0.848 to 0.9323, which is above the required criterion of 0.70. The average variance extracted (AVE) for all constructs are greater than 0.50, showing strong convergent validity. Variance Inflation Factor (VIF) values are less than 5, demonstrating indicator dependability and the absence of multicollinearity. These results prove that the measurement model is reliable and valid.

Table 2

Outer loadings, VIF, Construct validity and reliability

Variables	Items	Outer loadings	VIF	Cronbach's Alpha	CR	AVE
Client in HSD	CI3 <- CI	0.8649	2.1231	0.8685	0.8761	0.7914
	CI4 <- CI	0.9032	2.3865			
	CI5 <- CI	0.9002	2.3704			
Culture in HSD	CU1 <- CU	0.8605	2.2128	0.8511	0.8701	0.6908
	CU2 <- CU	0.7668	1.6526			
	CU3 <- CU	0.8238	1.9950			
	CU4 <- CU	0.8695	2.1233			
Hws Management	HW1 <- HW	0.8174	2.1437	0.8950	0.9156	0.7032
	HW2 <- HW	0.8610	2.5056			
	HW3 <- HW	0.8779	2.9264			
	HW4 <- HW	0.8761	2.8608			
	HW5 <- HW	0.7540	1.9304			
Learning	LE1 <- LE	0.8850	3.0957	0.8963	0.9108	0.7084
	LE2 <- LE	0.8712	2.9706			
	LE3 <- LE	0.7337	1.6864			

	LE4 <- LE	0.8806	2.6180			
	LE5 <- LE	0.8282	2.1955			
Management in HSD	MA1 <- MA	0.7649	2.2430	0.9007	0.9323	0.6205
	MA2 <- MA	0.7462	1.8665			
	MA3 <- MA	0.7739	2.1545			
	MA4 <- MA	0.7947	2.5445			
	MA5 <- MA	0.8043	2.3305			
	MA6 <- MA	0.8379	2.2336			
	MA7 <- MA	0.7886	1.8339			
Planning and Budgeting	PB1 <- PB	0.8266	2.8042	0.9021	0.9042	0.6720
	PB2 <- PB	0.8209	3.1802			
	PB3 <- PB	0.8512	3.1854			
	PB4 <- PB	0.8468	2.8575			
	PB5 <- PB	0.7823	2.2627			
	PB6 <- PB	0.7881	2.4053			
Process in HSD	PR1 <- PR	0.8819	2.3577	0.8998	0.9029	0.8337
	PR2 <- PR	0.9456	4.0896			
	PR3 <- PR	0.9105	3.1887			
Resources in HSD	RE1 <- RE	0.8001	1.7831	0.8462	0.8482	0.6844
	RE2 <- RE	0.8518	2.1465			
	RE4 <- RE	0.8272	1.9860			
	RE5 <- RE	0.8294	1.8434			
Client Ratings in SHSD	RA1 <- RA	0.8810	2.4839	0.8717	0.8822	0.7233
	RA2 <- RA	0.8617	2.2956			
	RA3 <- RA	0.8871	2.5613			
	RA4 <- RA	0.7664	1.6582			

Table: 3 presents the results of discriminant validity assessment using both the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio of correlations. The diagonal values, highlighted in bold, represent the square roots of the Average Variance Extracted (AVE) for each construct. According to the Fornell-Larcker criterion, these values should exceed the corresponding inter-construct correlations within the same rows and columns (Henseler *et al.*, 2015). According to established guidelines, HTMT values below 0.85 are considered evidence of good discriminant validity, while values up to 0.90 may be acceptable in some research contexts; values above 0.90 suggest potential overlap between constructs. This condition is satisfied, indicating that the constructs demonstrate adequate discriminant validity. For each construct (e.g., CI, CU, HW, etc.), the diagonal value is greater than all corresponding off-diagonal correlations in its row and column. For example, the square root of AVE for CI is 0.8896, which is higher than its correlations with any other construct (the highest being 0.5617 with LE). Similar comparisons for all constructs show that this criterion is consistently met. This pattern confirms adequate discriminant validity, indicating that each construct is empirically distinct from the others and that the latent variables capture unique aspects of the model. This finding supports the appropriateness of the measurement model for subsequent structural analysis. The HTMT value for PB (0.9131) slightly exceeds the conservative threshold, indicating potential concerns regarding discriminant validity between these constructs.

Table 3

Discriminant Validity Fornell–Larcker criterion and Heterotrait Monotrait ratios of correlations

Constructs	**CI**	**CU**	**HW**	**LE**	**MA**	**PB**	**PR**	**RE**	**RA**
CI	**0.8896**	0.5266	0.4559	0.5617	0.4539	0.3605	0.5129	0.4268	0.5320
CU	0.6039	**0.8312**	0.4708	0.8124	0.5689	0.5508	0.6294	0.5988	0.6521
HW	0.5060	0.5298	**0.8386**	0.4550	0.7114	0.4147	0.3502	0.2985	0.3747
LE	0.6320	0.8152	0.4914	**0.8416**	0.5188	0.4627	0.6042	0.5959	0.6298
MA	0.4848	0.6190	0.8036	0.5573	**0.7877**	0.5043	0.4384	0.4397	0.4357
PB	0.4044	0.6204	0.4585	0.5137	0.5352	**0.8197**	0.5024	0.5426	0.5317
PR	0.5750	0.7045	0.3796	0.6619	0.4545	0.5563	**0.9131**	0.7285	0.7733
RE	0.4908	0.6902	0.3299	0.6757	0.4706	0.6214	0.7910	**0.7350**	0.7504
RA	0.6077	0.7460	0.4171	0.7023	0.4560	0.5994	0.8468	0.7153	**0.8273**

Below the diagonal elements are the heterotrait–monotrait ratios of the correlation values. Above the diagonal elements (bold) are the correlations between the construct's values (Fornell–Larcker criterion).

Model fit was assessed using several indices. The Standardized Root Mean Square Residual (SRMR) for both the saturated and estimated models was 0.0597, indicating a good fit as values below 0.08 are generally considered acceptable. The chi-square value was 2422.99 for both models, reflecting the degree of discrepancy between the observed and estimated covariance matrices. The Normed Fit Index (NFI) was 0.8059, which suggests an acceptable level of model fit, as values above 0.80 are typically regarded as adequate for exploratory research. These indices collectively support the adequacy of the model fit for the data.

The coefficient of determination (R^2) for the dependent variable, sustainable health service delivery (RA), was 0.6892, with an adjusted R^2 of 0.6826. This indicates that approximately 69% of the variance in sustainable health service delivery can be explained by the model's independent variables, demonstrating a substantial explanatory power Fig: 2. The minimal difference between the R^2 and adjusted R^2 values also suggests that the model is robust and not overfitted. While these findings contribute valuable insights into the IAs factors underlying the observed phenomena in SHSD. The interpretive power is limited by the model's assumptions and potential measurement errors. The results indicated IAs related factors that may benefit from further scrutiny and refinement of existing theoretical frameworks.

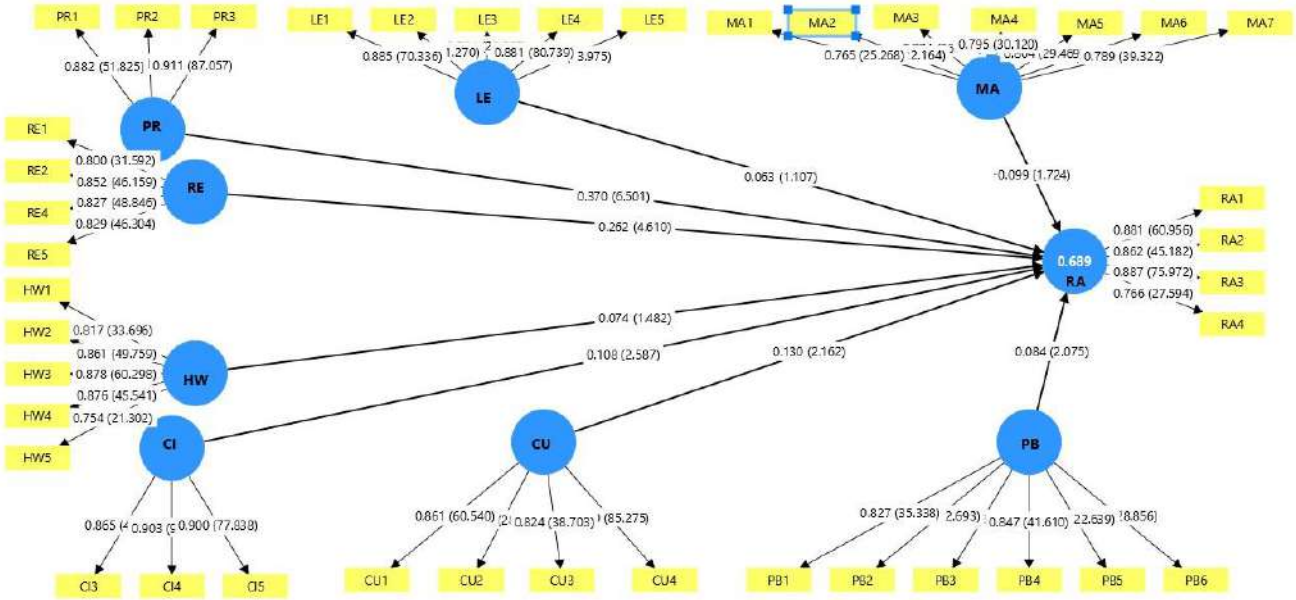

Figure 2
Structural model

4.1.4 Structural Model Assessment Results.

The principal objective of this study was to assess how various IAs as independent variables influence SHSD, the dependent variable, in CDHs in Tanzania's Lake Zone. The eight exogenous IAs examined were: client management, organisational culture, employee management, hospital learning capacity, management and leadership effectiveness, planning and budgeting, process management, and resources management. The f-square (f^2) statistic is employed to assess effect size by quantifying the extent to which an exogenous variable contributes to the R^2 value of an endogenous variable (Hair et al., 2011). Higher f-square values indicate a greater influence of the exogenous variable on the endogenous construct. Furthermore, the path coefficient (β) denotes both the strength and direction of the relationships between latent variables (exogenous and endogenous) within the structural model.

Table: 4 indicated results from the independent variables, process management ($\beta = 0.3698$, $p < 0.001$) and resource management ($\beta = 0.2616$, $p < 0.001$) had the most significant positive effects on SHSD. Client management ($\beta = 0.1079$, $p = 0.0097$), organisational culture ($\beta = 0.1301$, $p = 0.0307$), and planning and budgeting ($\beta = 0.0836$, $p = 0.0381$) also demonstrated significant positive relationships. Conversely, management and leadership effectiveness exhibited a weak, negative, and only marginally significant association with SHSD ($\beta = -0.0993$, $p = 0.0847$), while employee management and hospital learning capacity did not show statistically significant effects.

Table 4

Results of the structural model

Hypothesis	Relation	Path coefficient(β)	T statistics	P values	f-square	Decision
H1	CI -> RA	0.1079	2.5873	0.0097**	0.0223	Supported
H2	CU -> RA	0.1301	2.1616	0.0307**	0.0450	Supported
H3	HW -> RA	0.0737	1.4824	0.1383	0.0256	Not Supported
H4	LE -> RA	0.0635	1.1070	0.2684	0.0239	Not Supported
H5	MA -> RA	-0.0993	1.7242	0.0847*	0.0389	Supported
H6	PB -> RA	0.0836	2.0748	0.0381**	0.0331	Supported
H7	PR -> RA	0.3698	6.5007	0.0000***	0.1467	Supported
H8	RE -> RA	0.2616	4.6096	0.0000***	0.0742	Supported

*Significance level *** p<0.001, ** p<0.05, * p<0.1*

4.2 Discussion

The primary objective of this study was to examine how different dimensions of IAs specifically management, planning, resource allocation, and organisational culture impact SHSD in CDHs within Tanzania's Lake Zone. Additionally, the study sought to identify which aspects of IAs most significantly predict improved SHSD from the perspective of hospital clients, particularly in settings shaped by local government and faith-based PPP collaborations.

4.2.1 Influence of IA Dimensions on SHSD

The findings underscore that robust IAs are fundamental to achieving effective and SHSD. Notably, process management demonstrated a significant positive influence on both the quality and accessibility of health services. This outcome lends empirical support to the RBT and echoes the conclusions of Zimuto and Zvarimwa (2022) as well as Ramori et al., 2021), who highlight operational excellence and workflow efficiency as critical drivers of competitive advantage in healthcare settings. These results suggest that the effectiveness of processes spanning patient registration, payment procedures, consultations, laboratory diagnostics, and pharmacy services plays a pivotal role in shaping the overall performance and sustainability.

Similarly, resource allocation encompassing the management of physical, financial, and human resources—was found to exert a strong positive influence on both hospital performance and sustainable health service delivery (SHSD). This finding aligns with the work of Kitole et al., (2025) and Ansmann et al., (2021) as well as studies on Chinese hospital public-private partnerships (PPPs) by Li and Wang (2024), all of which emphasize the pivotal role of resource stewardship in enhancing PPP outcomes and mitigating risks of project failure. These results suggest that the optimal deployment of health workers, efficient utilisation of pharmaceuticals and health facilities, and effective time management are critical determinants of effectiveness and sustainability.

Client management also surfaced as a significant determinant, directly contributing to increased patient satisfaction, enhanced trust, and improved service access. This observation is consistent with the findings of Altarifi et al., (2024) and Kaiser et al., (2025), who demonstrated that active stakeholder engagement, systematic incorporation of user feedback, and collaborative governance mechanisms can drive improvements in both cost-effectiveness and accessibility of health services. Critically, these results imply that the adoption of efficient queuing systems, and critical case management protocols, and the implementation of automated queuing technologies can further streamline service delivery, reduce patient wait times, and promote equitable access ultimately strengthening the overall patient experience within healthcare settings.

4.2.2 Organisational Culture, Planning, and Budgeting

The study revealed that a strong organisational culture characterised by shared values, cultural competence, and a supportive internal environment significantly enhances both healthcare outcomes and staff morale. This finding is corroborated by the work of Zimuto and Zvarimwa (2022) and Ramori et al., (2021), who argued that cultural attributes are essential for fostering resilient and high-performing healthcare organisations. Additionally, the importance of planning and budgeting emerged as a central theme drawing on insights from Agency Theory (Kigume *et al.*, 2018). The results was consistent to Decker et al., (2023) who found transparent, accountability, and well-structured financial planning is fundamental in achieving operational efficiency. Empirical evidence from both the Chinese and Tanzanian healthcare contexts further substantiates that fiscal discipline and robust planning capacity are closely associated with improved hospital and project outcomes (Kitole et al., 2025; Li & Wang, 2024).

The findings suggested that effective planning and budgeting processes must be closely integrated across critical operational domains including patient registration, payment procedures, consultation workflows, laboratory diagnostics,

pharmacy services, and the management of essential drugs and health facilities. Such integration is essential to optimise resource utilisation and enhance the overall quality of health service.

4.2.3 Divergences and Contextual Factors

The study's findings on management and leadership effectiveness offered a nuanced addition to the literature on health service delivery. While much of the prevailing scholarly positions strong leadership as fundamental to organisational transformation and improved outcomes (Li & Wang, 2024; Wiedenmayer et al., 2019), this study observed only a weak, negative, and marginally significant association between management and leadership effectiveness and SHSD. This divergence is echoed in recent research by Li & Wang (2024), who caution that simply increasing government involvement or expanding regulatory oversight does not inherently yield better results; in some cases, excessive government size may even elevate the risk of project failure. The findings from Tanzania Kitole et al., (2025; Bwana, 2021) further suggested that neither the longevity of a hospital nor the duration of a PPP guarantees improved performance. Instead, technical change, managerial innovation, and quality local governance emerge as more decisive factors in driving efficiency and productivity. These patterns imply that the immediate, visible impact of leadership may be less influential than previously thought and that its positive effects might manifest over an extended timeframe, thus underscoring the need for longitudinal and context-sensitive impact assessments.

Similarly, the study found that employee management and hospital learning capacity did not had statistically significant effects on SHSD. This finding stands in contrast to earlier work that highlights the transformative potential of organizational learning and effective workforce management in healthcare (Lyimo *et al.*, 2024; Govindasamy *et al.*, 2024; Gilardino et al., 2022). The lack of significance observed in this context may be explained by several factors: the influence of employee management and learning could be mediated by other organisational variables, such as culture or resource availability, or these factors may exert their effects through more complex and indirect pathways. Additionally, the challenges associated with community engagement and governance structures such as limited capacity, irregular meetings, and unclear mandates further complicate the relationship between workforce development and service delivery outcomes (Kaiser et al., 2025 ; Nuhu et al., 2020 ; Masanyiwa et al., 2019). Collectively, these findings invite further research to refine conceptual frameworks and develop more sensitive measurement instruments, thereby enabling a deeper understanding of how workforce development, institutional learning, and contextual governance factors interact to shape healthcare performance.

4.2.4 Implications of the Study

The findings of this study reinforced the global consensus that robust process management, strategic resource planning, and a strong organisational culture are essential prerequisites for achieving sustainable, high-quality health service delivery, both in traditional and PPP hospital settings. Importantly, the broader literature underscores that the ultimate effectiveness of IAs is profoundly shaped by contextual factors such as the quality of governance, fiscal stability, and the capacity of local stakeholders. These determinants can either amplify or constrain the positive effects of IAs on health service outcomes. Furthermore, the evidence highlighted a critical need for ongoing investment in technology adoption, managerial innovation, and collaborative governance practices. These elements are consistently recognised as foundational for building system resilience and driving continuous improvements in service quality and operational efficiency.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

The results demonstrate that six out of eight hypothesized relationships between institutional arrangements and client-rated health service delivery (RA) in Council Designated Hospitals are statistically significant. In particular, process management (PR) and resource management (RE) exhibit the most substantial positive effects, highlighting their critical roles in enhancing the reliability and responsiveness of health services. Additionally, client–institution interaction (CI), organisational culture (CU), and planning and budgeting (PB) were found to have significant positive impacts on service delivery. Conversely, management and leadership (MA) show a significant but negative effect, which may indicate a misalignment between current managerial practices and client expectations. Hospital workforce practices (HW) and the learning environment (LE), meanwhile, do not display significant direct effects, suggesting that their influence on service delivery may be indirect or become more apparent over an extended period.

5.2 Recommendations

The study recommends that Council Designated Hospitals (CDHs) prioritise strengthening process and resource management. Emphasis should be placed on enhancing operational procedures and optimizing resource utilization to improve the reliability and overall quality of health service delivery. Furthermore, CDHs are encouraged to promote

client-centered engagement by implementing initiatives that foster effective client–institution interactions and improve client understanding, thereby further enhancing client satisfaction and perceived service quality.

The study recommends LGAs to Enhance Financial Planning. It includes essential to reinforce robust planning and budgeting mechanisms to support sustainable and efficient health service delivery. Also, Reevaluate Management Practices: Leadership and management strategies should be critically reviewed and realigned to better meet client expectations, thereby mitigating potential negative perceptions and outcomes.

Both Local Government Authorities (LGAs) and Faith-Based Organizations (FBOs) should critically consider sustained investment in workforce development and the organizational learning environment. Although these factors did not demonstrate direct statistical significance in the current analysis, overlooking their potential long-term impact may undermine future service delivery improvements. Continuous workforce training and fostering a culture of organizational learning are fundamental for building adaptive, skilled, and resilient health systems. Failure to invest in these areas could result in stagnation, reduced staff motivation, and limited capacity to respond to emerging health challenges. Therefore, a proactive and strategic commitment to workforce and learning environment enhancement remains essential for sustainable advancements in health service delivery.

Declaration of Interest

The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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